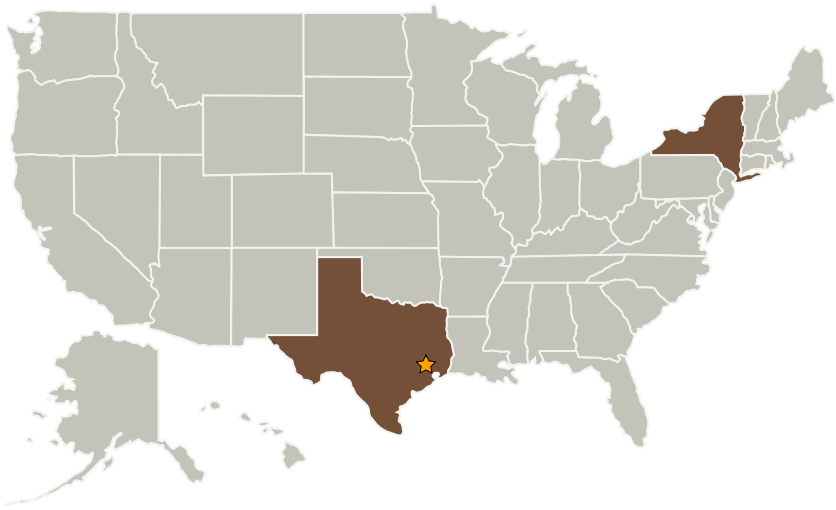
Birefringent Microlens Array for Ultra High Resolution HMDs, Phase I

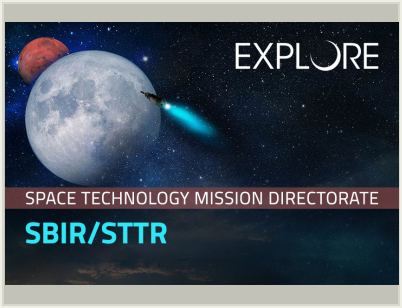
Completed Technology Project (2005 - 2005)

Project Introduction

This Small Business Innovation Research Phase I project will be used to analyze, design, model, and test a birefringent microlens array for use in a new type of ultra high resolution virtual reality display. DTI has demonstrated a technology that uses a rapidly scanned miniature LCD to produce images possessing much more resolution than the LCD itself. It accomplishes this by illuminating different subregions of each pixel during each scan, producing an image made up of the subregions instead of the pixels themselves. At present, custom made microdisplays with lens arrays embedded in the front glass are needed to focus light into the tiny pixel subregions. This Phase I program will assess the feasibility of a novel type of lens array that can be mounted outside the microdisplay glass and still focus light into the tiny pixel subregions. Such an element could be added to existing microdisplays after the microdisplays were manufactured, thus eliminating the need for custom microdisplays and allowing several off the shelf models to employ DTI's ultra high resolution technique at much lower cost. Products made with these displays hold the promise of new benchmarks in image fidelity and immersion in VR and tele-operated systems.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Dimension Technologies Inc	Supporting Organization	Industry	Rochester, New York

Primary U.S. Work Locations	
New York	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jesse Eichenlaub

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes